Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Amendment of Part 2 of the Commission's Rules for Federal Earth Stations Communicating with Non-Federal Fixed Satellite Service Space Stations;	)	ET Docket No. 13-115
	)	RM-11341
Federal Space Station Use of the 399.9-400.05 MHz Band; and	)	
Allocation of Spectrum for Non-Federal Space Launch Operations	)	

To: The Commission

REPLY COMMENTS OF
THE BOEING COMPANY

The Boeing Company ("Boeing") provides these reply comments in response to the Commission's Notice of Proposed Rulemaking ("NPRM") regarding the spectrum needs of the commercial space sector.[1] Boeing writes to support the comments of those parties that acknowledge that the Commission can best facilitate the commercial launch industry by maintaining, with slight refinements, the current well-tested approach of experimental authorization and Federal spectrum coordination.[2] Although Boeing recognizes the desire of some operators to seek a more formal licensing process, none of the proposals to adopt allocation

[1] *Amendment of Part 2 of the Commission's Rules for Federal Earth Stations Communicating with Non-Federal Fixed Satellite Service Space Stations; Federal Space Station Use of the 399.9-400.05 MHz Band; and Allocation of Spectrum for Non-Federal Space Launch Operations, ET Docket No. 13-115, RM-11341*, Notice of Proposed Rulemaking, FCC 13-115 (2013) ("*NPRM*" or "*NOI*").

[2] *See, e.g.*, Comments of SIA, ET Docket No. 13-115 (August 30, 2013) ("*SIA Comments*"); Comments of Lockheed Martin Corporation, ET Docket No. 13-115 (August 30, 2013) ("*Lockheed Martin Comments*").

and service rules appear likely to measurably improve either the access to spectrum or the interference protection available to non-Federal operators. Despite this difference, the record reflects substantial agreement on several refinements that the Commission may adopt that would improve non-Federal operators' access to launch spectrum. Specifically, the Commission should issue two-year experimental licenses rather than six-month Special Temporary Authorizations ("STAs"), should expand permissible operations in the 2200-2290 MHz band to include pre-launch development testing, and should permit the use of the 2200-2290 MHz band at non-Federal FAA-licensed spaceports. These modifications to the existing process would better align the Commission's process with the evolving needs of non-Federal launch providers while preserving the regulatory continuity that has promoted the growth of the industry.

I. THE EXISTING PROCESS FOR NON-FEDERAL LAUNCH OPERATORS TO ACCESS FEDERAL SPECTRUM IS SUFFICIENT AND PREFERABLE TO ANY PROPOSED ALTERNATIVES

Boeing joins with the Satellite Industry Association ("SIA") in reiterating that the current system works and that no non-Federal allocation appears necessary at this time.[3] As amplified below, the best way at present for the Commission to promote the continued development of the non-Federal launch sector appears to be to maintain the existing system of experimental authorization and Federal spectrum coordination, which provides operators the confidence of a well-understood procedure, minimal regulatory burden, and *de facto* interference protection from Federal operations through the Federal coordination process.

[3] Comments of Boeing, ET Docket No. 13-115 at 7 (August 30, 2013) ("*Boeing Comments*"); *SIA Comments* at 13; *Lockheed Martin Comments* at 7.

A. Non-Federal Launch Operators Currently Receive *De Facto* Interference Protection from Federal Users Through the Federal Coordination Process

Use of Federal launch frequencies is arranged through Federal launch controllers and Federal spectrum coordinators such as the NASA flight facility spectrum managers and the Air Force Spectrum Management Office. As Boeing explained in its initial comments, when scheduling a launch, Federal coordinators ensure that no other Federal users are using the spectrum in a potentially conflicting manner at the same time.[4] Because the spectrum has no non-Federal allocation, this Federal coordination is sufficient to ensure that "each launch receives *de facto* interference protection."[5]

Non-Federal launches at non-Federal facilities will likely be subject to the same spectrum coordination as launches at Federal facilities, both with respect to the frequencies assigned and the schedule on which those frequencies are available for use. Non-Federal launch operators using non-Federal facilities should therefore be able to anticipate the same *de facto* interference protection with respect to Federal users as operators using Federal facilities have enjoyed.

Thus, the *de facto* protection secured through Federal coordination has worked well, and will continue to do so. Federal coordinators are able to ensure reliability and certainty by coordinating the limited users of the Federal spectrum to accommodate non-Federal launch operations. No reason appears to exist to change this approach to Federal coordination.

B. A Non-Federal Co-Primary Allocation Is Unlikely to Substantially Improve Non-Federal Operators' Access to Spectrum Over the Existing Process

The commenting parties are broadly unified in their goals of ensuring adequate interference protection, minimizing uncertainty in spectrum access, and avoiding regulatory

[4] *Boeing Comments* at 8-9.

[5] *SIA Comments* at 14.

burdens for non-Federal launch operators. Some commenters, however, differ on whether a non-federal allocation or a footnote would best serve these goals. Boeing recognizes the concerns of the commenters that assert that significant changes are needed, but believes that the proposed changes would not produce significant improvements for non-Federal space operators and therefore do not warrant a departure from the existing and functioning system.

SpaceX, for instance, seeks a footnote establishing co-primary status for non-Federal operations in the 2200-2290 MHz band, along with "standard, clearly-defined application and coordination processes."[6] SpaceX references what it believes to be several problems with the *status quo*, including "significant business uncertainty, both in terms of approval prior to schedule launch date, as well as with regard to the inherent uncertainty of non-interference status."[7] The Commercial Spaceflight Federation ("CSF") seeks a footnote or an allocation, noting that "STA grantees are not allowed to cause interference with Federal users and must accept interference from Federal users of that band operating with authorizations."[8] SpaceX acknowledges that, as a result of the continuing co-primary Federal allocation, coordination will always be required, but posits that under a co-primary allocation "this coordination will be materially simplified and less burdensome should specific portions of the 2200-2290 MHz band be identified as the nominal frequencies for commercial space launch operations."[9] Likewise, CSF suggests that "identifying specific portions of the 2200-2290 MHz band for commercial

[6] Comments of SpaceX, ET Docket No. 13-115, at 6 (Aug 30, 2013) ("*SpaceX Comments*").

[7] *Id*.

[8] *CSF Comments* at 2.

[9] *SpaceX Comments* at 7.

space launch operations will help simplify coordination with the NTIA, minimizing any conflicts."[10]

As a threshold matter, given the volume of launches that SpaceX and others have achieved thus far and expect to undertake in the near future, it is likely that as experience is gained with the Federal coordination process, SpaceX will find that the current system does in fact provide a predictable, well-understood process that produces reliable and interference-free access to launch spectrum. The launch industry has operated successfully for decades under the light regulatory touch of the current approach, and this well-understood and effective system should not be abandoned without good reason and a clear, superior alternative.

Moreover, there is no reason to believe that a non-Federal allocation or footnote establishing "nominal" commercial frequencies within the 2200-2290 MHz band will in any way simplify the Federal coordination aspect, as SpaceX expects, because it is unlikely that any Federal users in these bands will avoid them on account of the non-Federal allocation. Likewise, even under an allocation approach, non-Federal users will not be empowered to interfere with Federal users except to the extent coordinated through the Federal spectrum coordinator, the same as at present. Thus, the allocation and footnote approaches proposed in the NPRM are unlikely to result in any substantial change in the interference protection status of non-Federal operators.

Broadly, Federal government control of these critical frequencies has provided, and will continue to provide, non-Federal space operators with the reliability and certainty of access needed to promote the growth of non-Federal launch operations while protecting Federal users.

[10] *CSF Comments* at 2.

The Commission should therefore maintain the successful existing approach, with the minor refinements identified below.

II. MINOR REFINEMENTS TO THE CURRENT PROCESS CAN ENSURE APPROPRIATE DURATION OF AUTHORIZATION, BREADTH OF USE, AND GEOGRAPHIC ACCESSIBILITY FOR LAUNCH OPERATORS

The Commission can make valuable improvements to the existing non-Federal launch authorization process without completely re-engineering it. The three proposed refinements below are consistent with the current process and offer simple, practical improvements to better align the current practice with the needs of commercial space operators while preserving the regulatory continuity that has promoted the development of the commercial space industry to date.

A. Non-Federal Launch and On-Orbit Operations Require Authorization for Longer than Six Months

The Commission should consider issuing conventional experimental licenses with two to five year durations, instead of the current practice of issuing six-month special temporary authorizations ("STAs"). The six months of operating authorization available under an STA does not accommodate the months or years of pre-launch development and testing, potential schedule changes for the launch event, as well as any subsequent entry into orbit operations. Commenters also seek authorizations that can extend to "multiple planned launches"[11] and "reduce the number of filings for frequency usage."[12]

[11] *Comments of SpaceX* at 9.

[12] *See* Comments of Orbital Sciences Corporation, ET Docket No. 13-115 (Aug. 29, 2013) ("*Orbital Comments*").

As Boeing explained in its initial comments, the 2013 Public Notice "Guidance on Obtaining Experimental Authorization for Commercial Space Launch Activities" contemplated the use of six-month STAs, but identified no reason why longer authorizations could not be granted.[13] Indeed, the NPRM acknowledged that "as an alternative to an experimental STA, the Commission may issue experimental licenses that are valid for up to five years."[14] Because the issuance of such licenses would not substantially change the existing process and would provide authorizations much more aligned to the true duration of development, testing, launch, and launch-to-orbit space operations, Boeing urges the Commission to direct OET to issue conventional experimental licenses for non-Federal launch operations. A five-year conventional experimental authorization could conceivably cover multiple launches, and could be renewed to cover further launches, if desired.

B. The Commission Could Consider Expanding the Permissible Operations in the 2200-2290 MHz to Include Pre-Launch Development Testing

The NPRM proposes to "limit non-Federal use of this band for space launches to pre-launch testing and for launches conducted at Federal ranges"[15] and asks whether this restriction would "unduly limit the future growth of the commercial space launch industry."[16] Boeing concurs with the many commenters that believe it would. The Commercial Spaceflight Federation notes that "by restricting [non-Federal access to the 2200-2290 MHz band] only to pre-launch testing and launch, commercial space launch companies will not have access to

[13] *Guidance on Obtaining Experimental Authorizations for Commercial Space Launch Activities, Public Notice*, DA 13-446 (2013) ("*Commercial Space Launch Notice*").

[14] *NPRM*, ¶ 72 n.140.

[15] *Id.*, ¶ 82.

[16] *Id.*

spectrum for critical developmental testing activities."[17] Manufacturers and operators of space launch vehicles require access to launch-related spectrum long before launch day for developmental testing. Various operators will require such access at Federal ranges, non-Federal ranges, or both, and therefore Boeing supports recommendations that the Commission permit non-Federal users to carry out "developmental commercial launch testing" under experimental authorization in the 2200-2290 MHz band.[18]

C. Use of the 2200-2290 MHz Band Should be Available at Non-Federal Ranges

In addition to expanding permissible activities to include developmental testing, the Commission should also provide for use of the 2200-2290 MHz launch frequencies at non-Federal ranges. The NPRM notes the potential efficiency improvements as commercial space operators may "incur lower development costs because they will be able to use the same communications systems for both Federal and non-Federal launches." [19] The comments demonstrated broad support for this proposal. The New Mexico Spaceport Authority, operators of Spaceport America, among many others, noted that "[t]here is a huge advantage to commercial launch operators in being able to use the same communications system hardware whether they operate from a Federal or commercial launch site."[20] Many new operators such as XCOR plan to launch largely or exclusively from non-federal ranges.[21] A modest expansion

[17] *Comments of the Commercial Spaceflight Federation*, ET Docket No. 13-115, at 2 (Aug. 30, 2013) ("*Commercial Spaceflight Federation Comments*").

[18] *Comments of SpaceX* at 5.

[19] *See NPRM*, ¶ 75.

[20] *Comments of New Mexico Spaceport Authority*, ET Docket No. 13-115, at 4 (Aug. 30, 2013) ("*Spaceport America Comments*").

[21] *Comments of XCOR*, ET Docket No. 13-115, at 4 (Aug. 30, 2013).

of the use of the 2200-2290 MHz range is therefore appropriate and may be accomplished by amending the Commission's proposed footnote text from only federal ranges to also at "FAA licensed commercial launch sites."[22]

III. CONCLUSION

The current spectrum access process for non-Federal space operators is well-tested and successful. The combination of Commission experimental authorization with Federal spectrum coordination has been the light regulatory touch required to promote the development of this rapidly-innovating industry. Boeing urges the Commission to refrain from attempts to re-engineer the current process by introducing a new co-primary non-Federal allocation and associated rules. Such an approach would be unlikely to substantially improve non-Federal operators' access to the spectrum and could introduce significant regulatory uncertainty. Instead, the Commission should adopt simple and common-sense refinements to build on the existing process and better align it with the current and future needs of the industry.

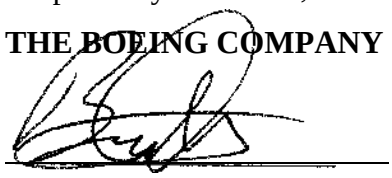
In particular, the Commission should issue two to five year conventional experimental licenses in lieu of the six-month STAs currently issued. In addition, the Commission should expand the permissible operations in the launch frequencies to include pre-launch development testing. Finally, the Commission should authorize the use of launch spectrum by operators at both Federal launch ranges and FAA-licensed non-Federal spaceports. These minor modifications to the existing process will better align the Commission's process with the

[22] *See, e.g., Spaceport America Comments* at 3; *Commercial Spaceflight Federation Comments* at 2; *SpaceX Comments* at 9.

evolving needs of non-Federal launch providers while preserving the regulatory continuity that has promoted the growth of the industry to date.

Respectfully submitted,

THE BOEING COMPANY

By: 

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